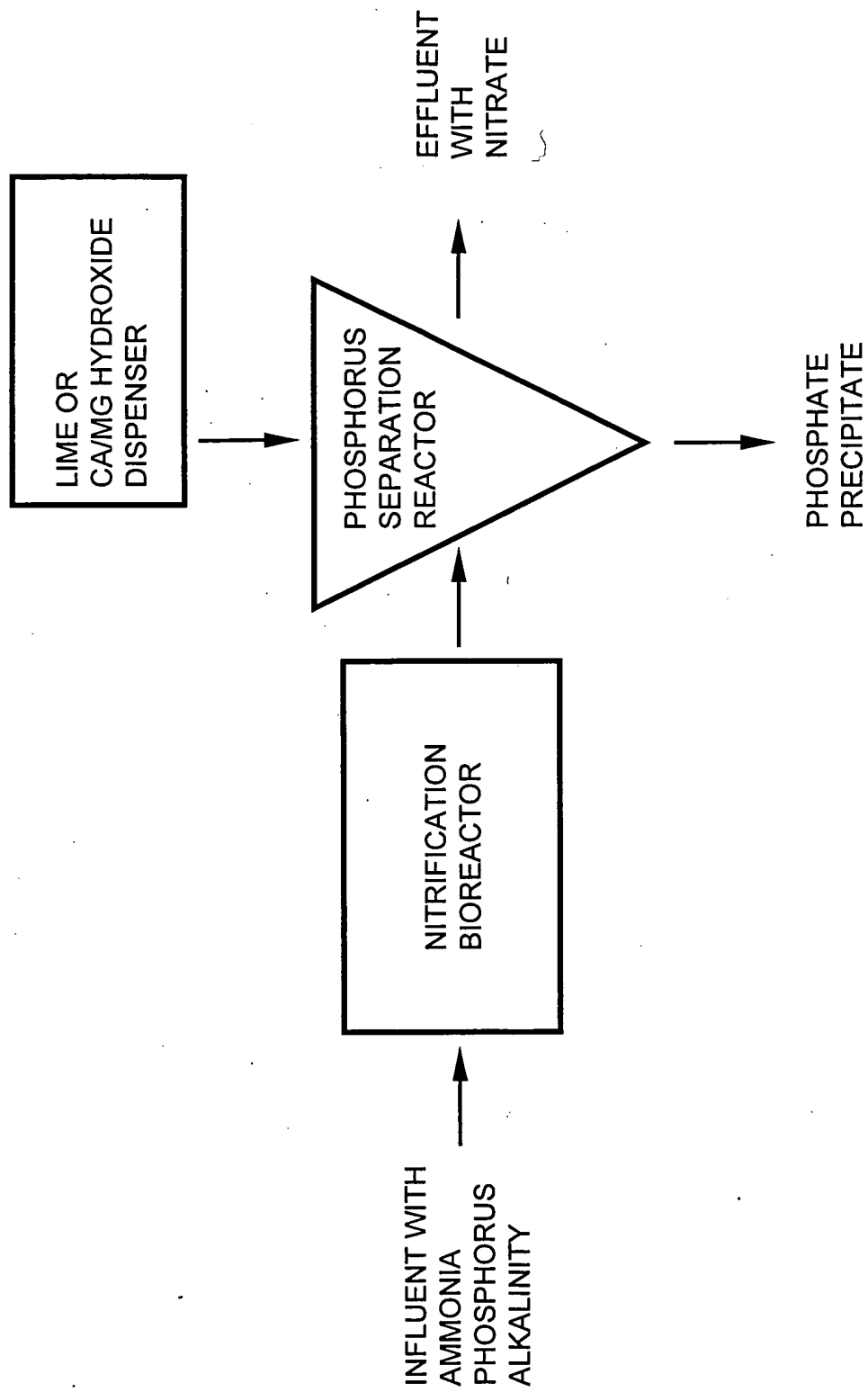


FIG. 1



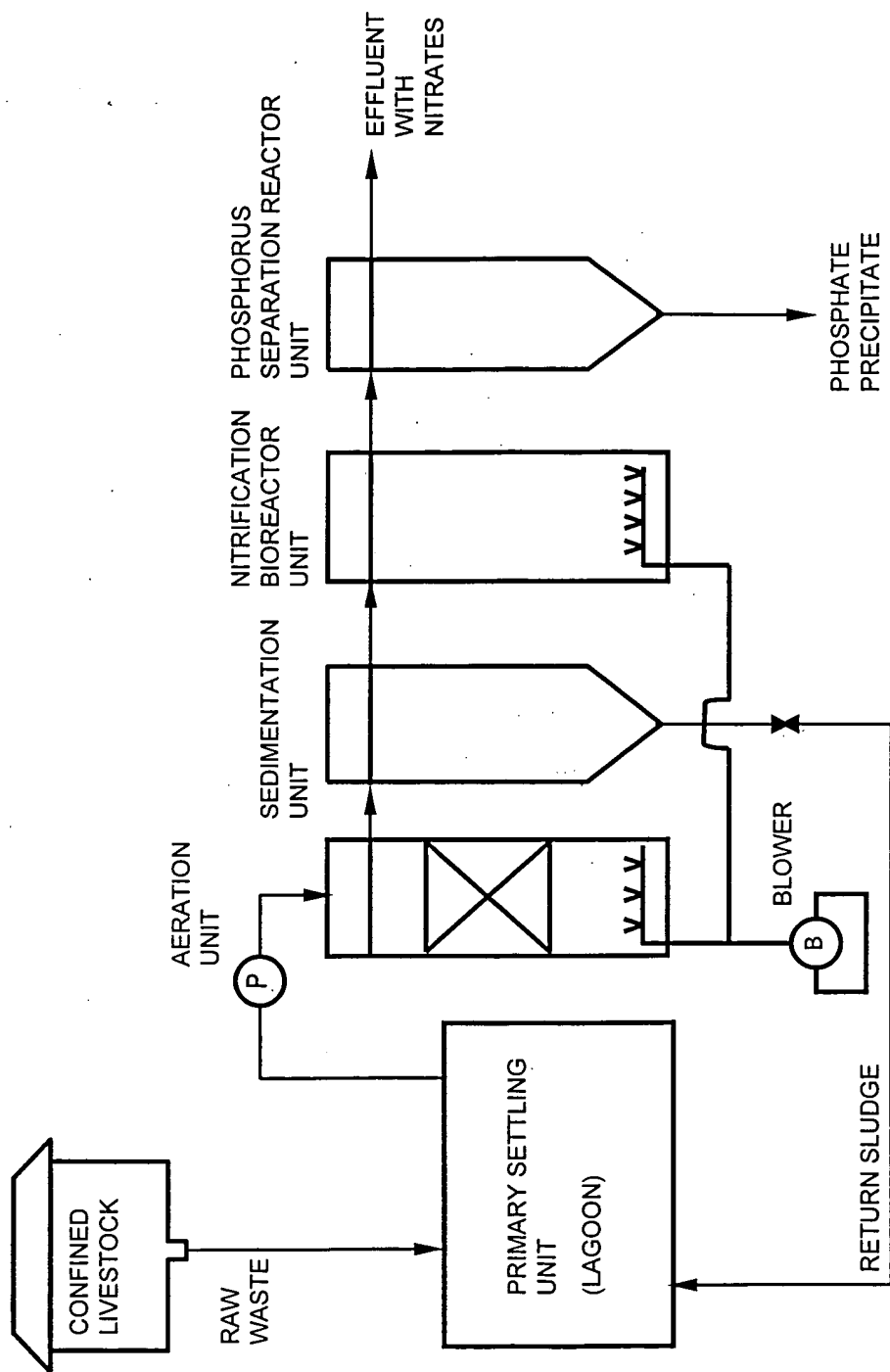
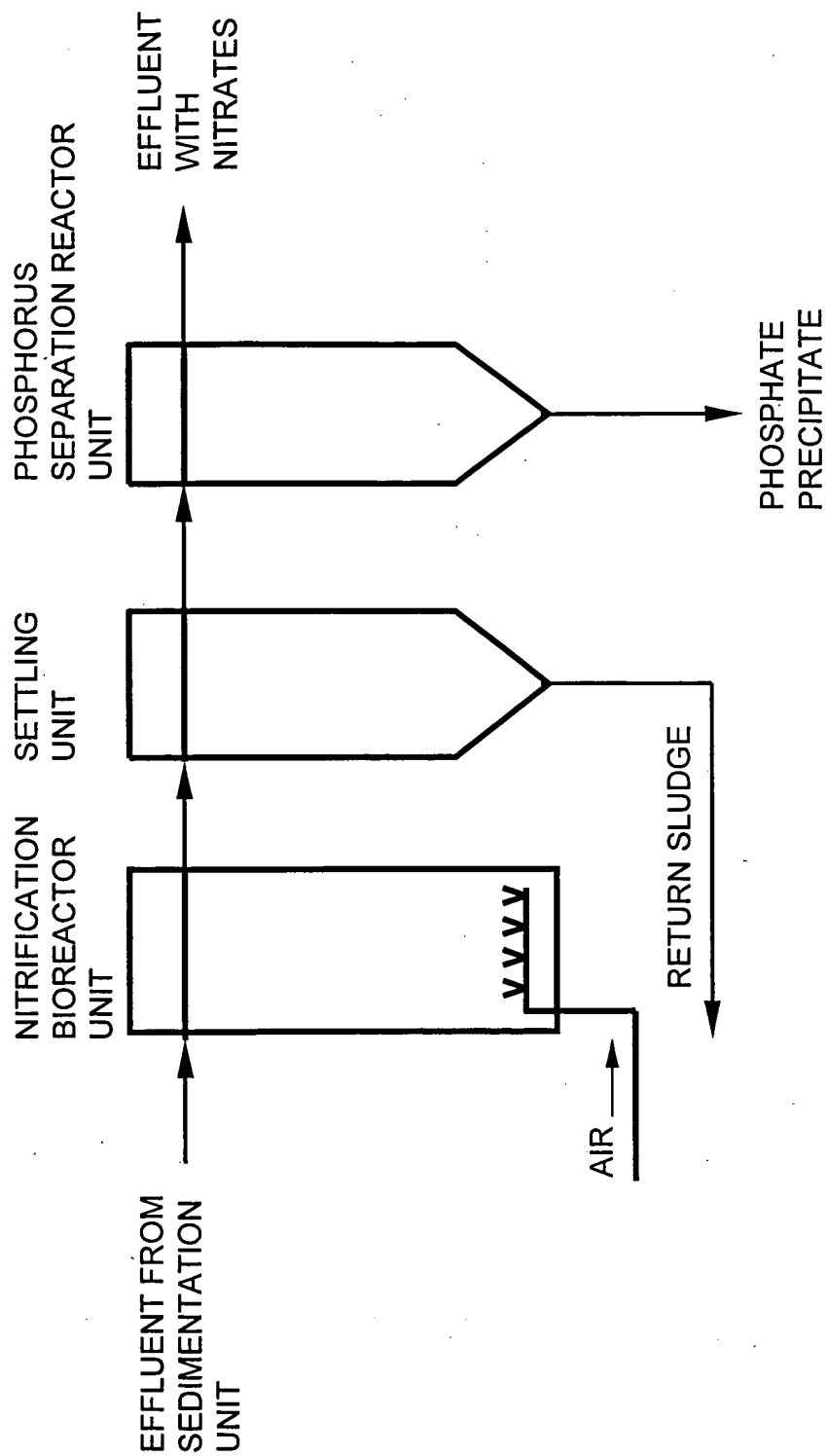


FIG. 2

FIG. 3



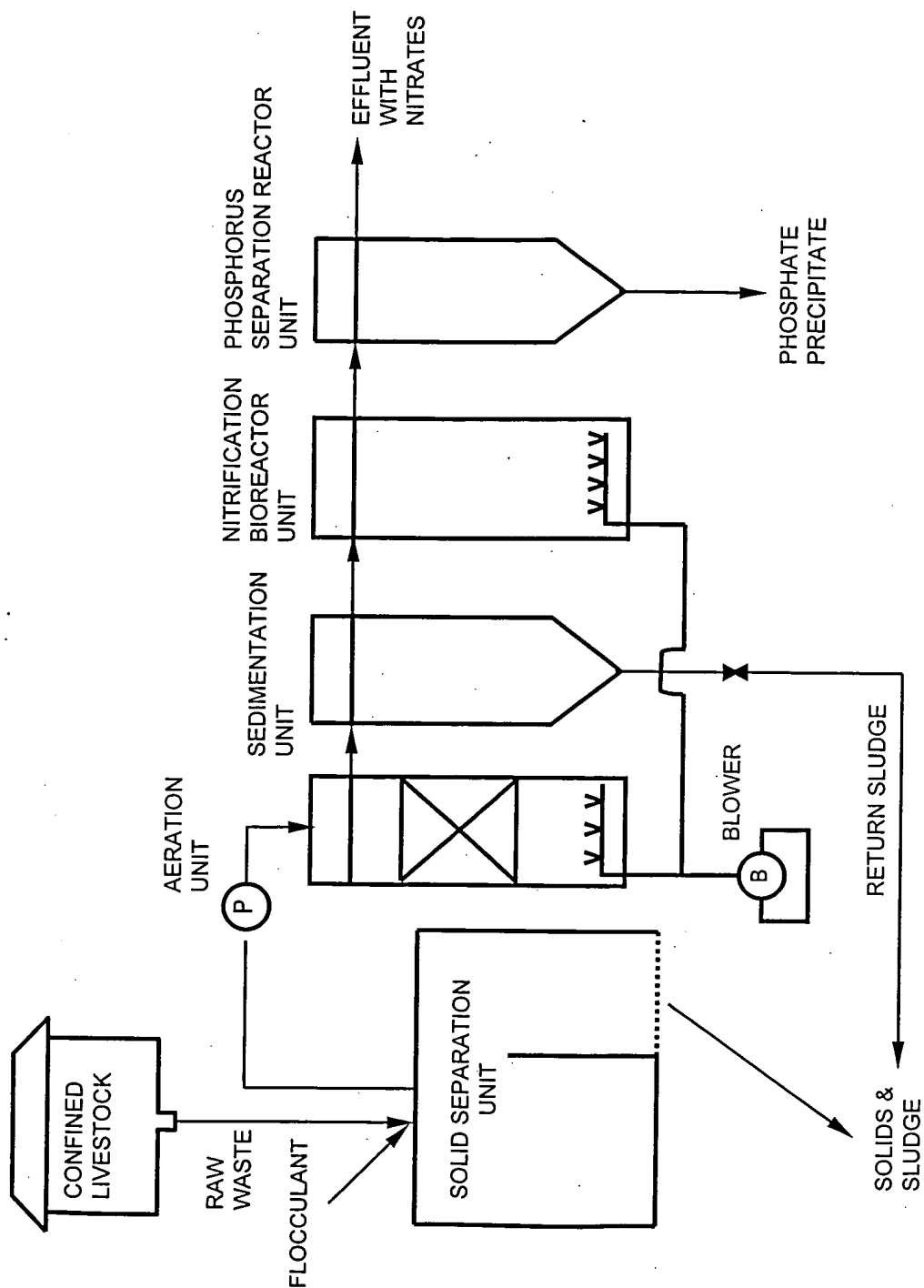
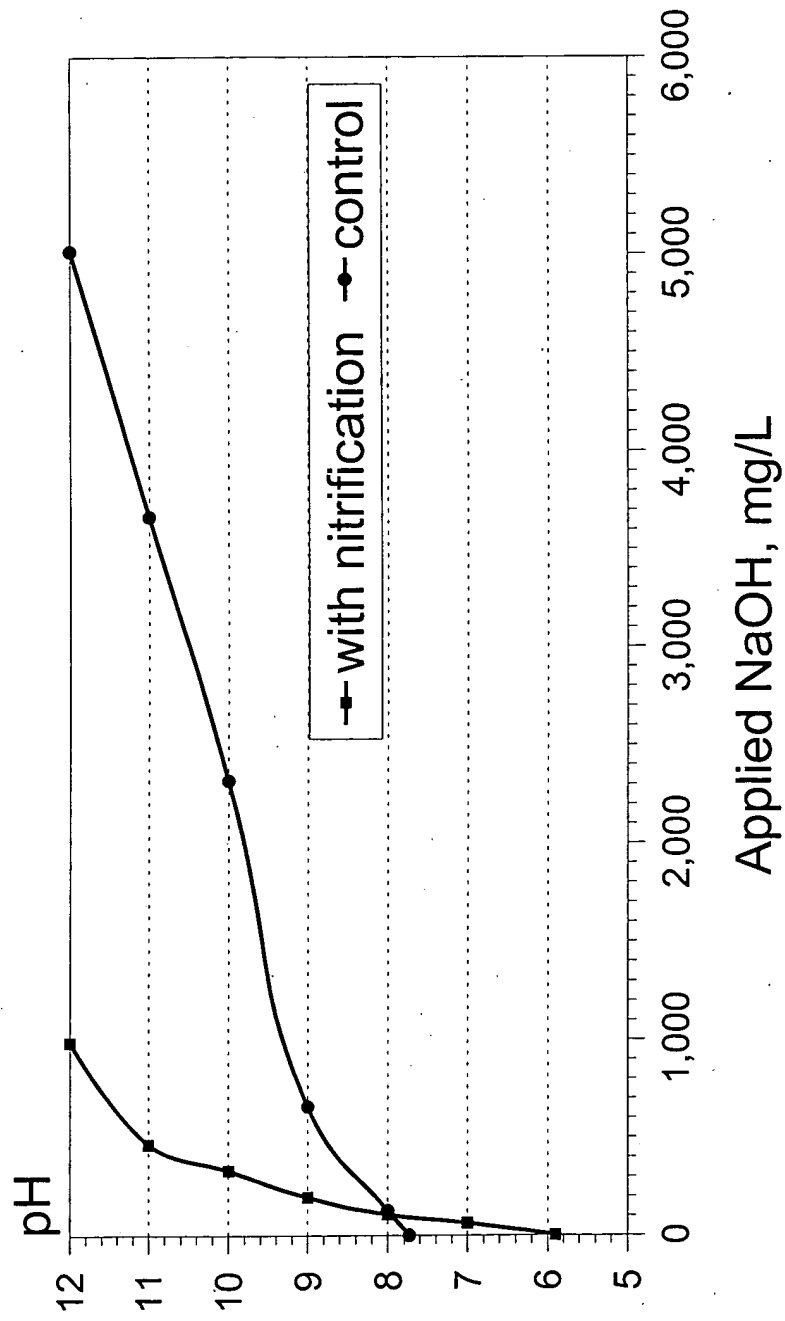


FIG. 4



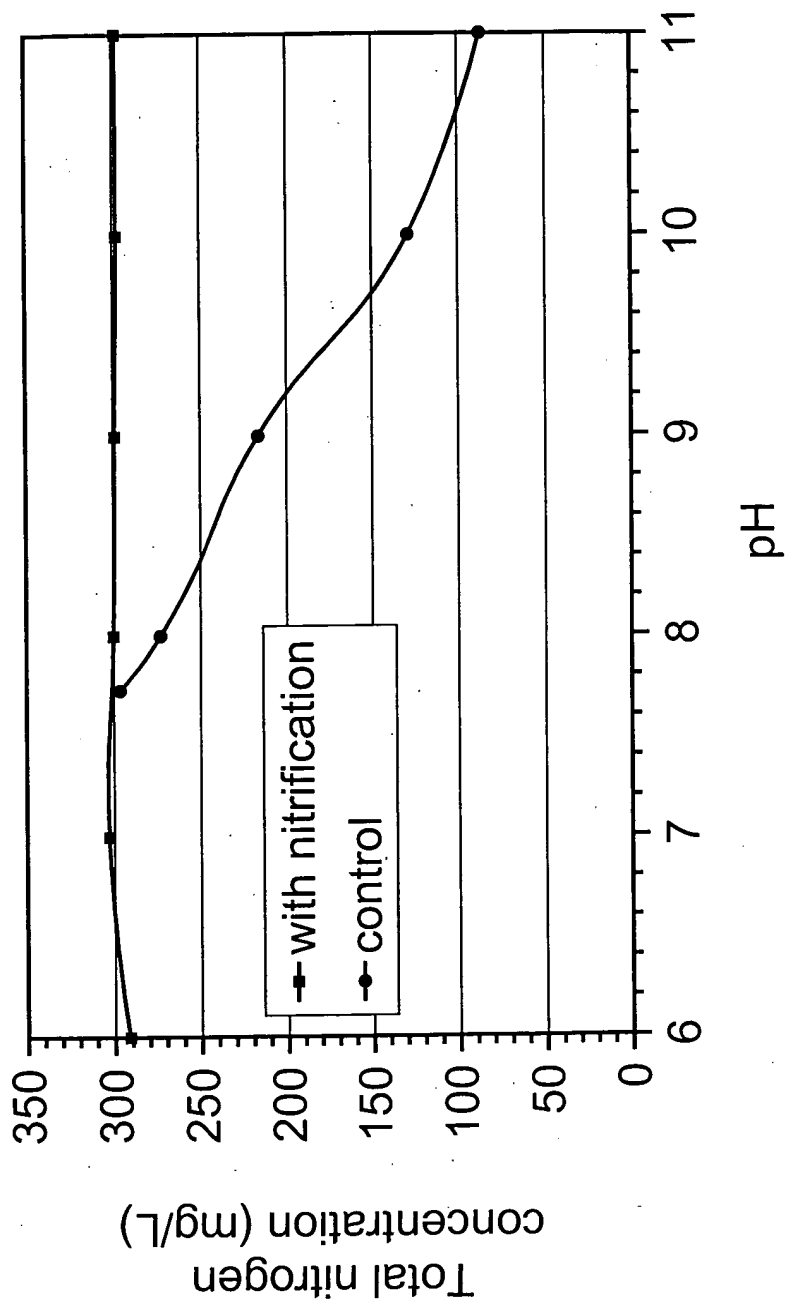


EFFECT OF ALKALI ADDITION ON pH OF SWINE WASTEWATER THAT  
RECEIVED NITRIFICATION PRETREATMENT VS. CONTROL

FIG. 6

Nitrogen losses in swine wastewater  
by ammonia volatilization

**FIG. 7**



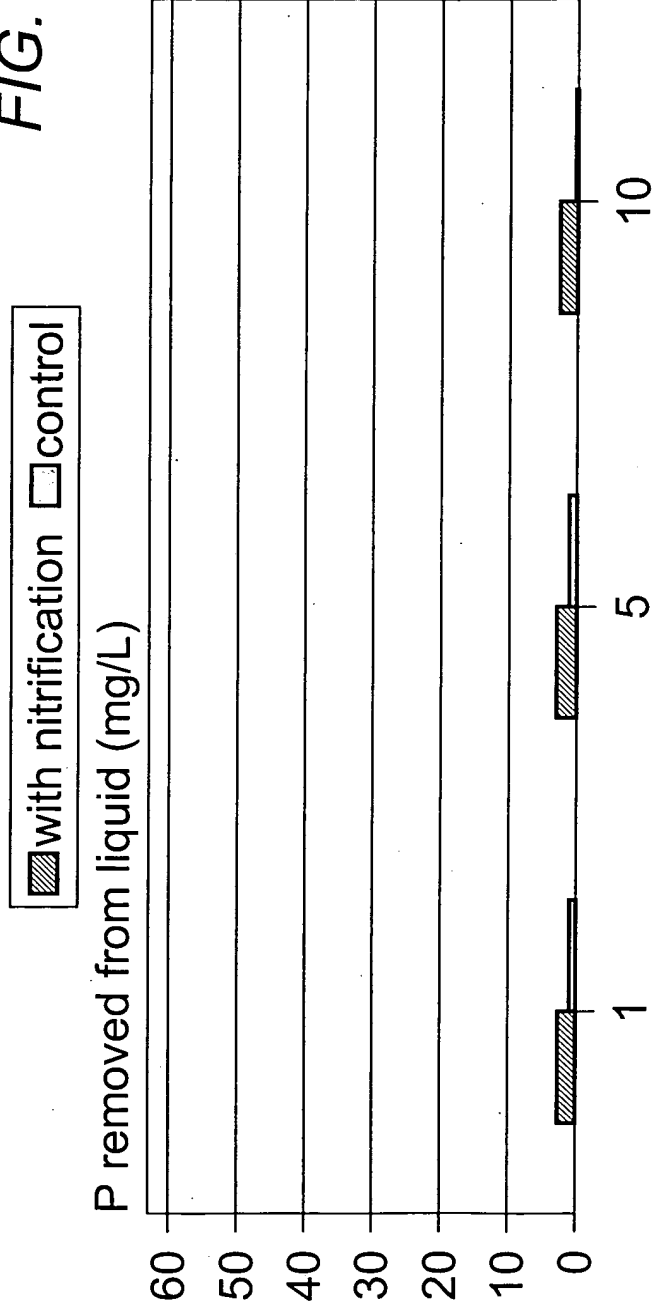






Use of Calcium Carbonate Lime was not effective  
for removal of phosphorus from swine wastewater

FIG. 10



Calcium carbonate rates (Moles of Ca added/ mol P)

Initial conditions:

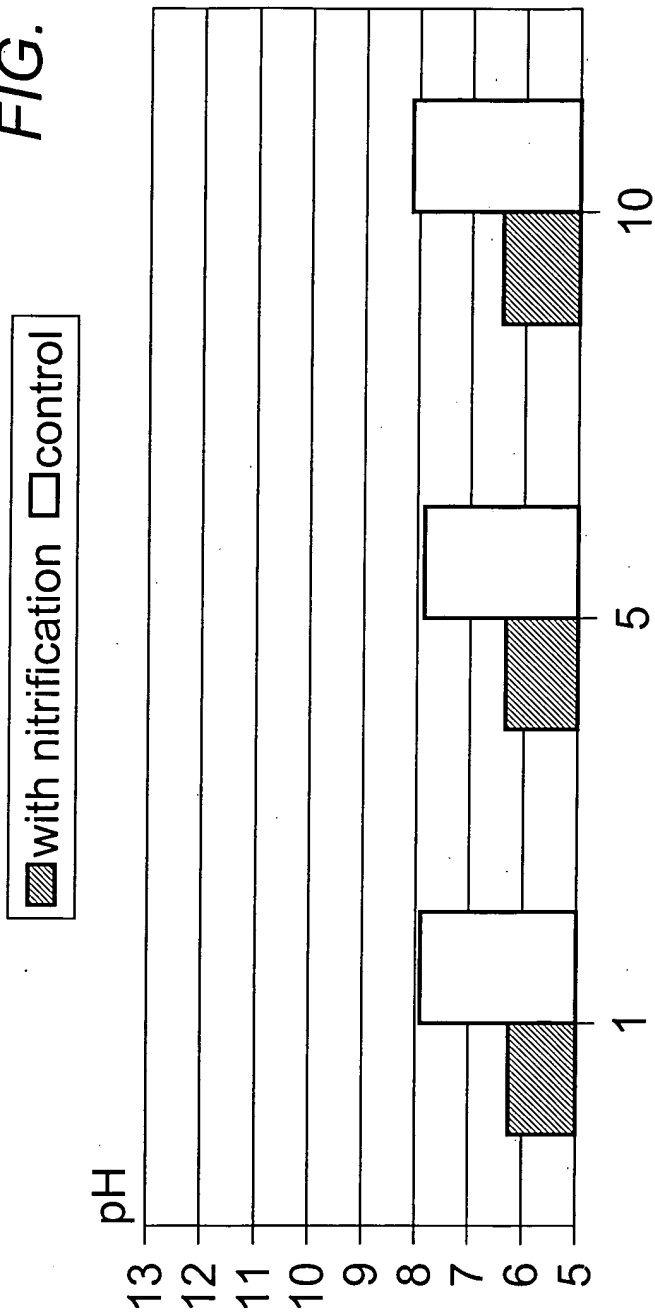
$\text{PO}_4\text{-P}$  = 63 mg/L, pH = 8.05, alkalinity = 1890 mg/L,  $\text{NH}_4\text{-N}$  = 300 mg/L

After nitrification:

$\text{PO}_4\text{-P}$  = 63 mg/L, pH = 6.06, alkalinity = 63 mg/L,  $\text{NH}_4\text{-N}$  = 61 mg/L

Application of Carbonate lime to swine wastewater  
did not affect pH or phosphorus removal.

FIG. 11



Calcium carbonate rates (Moles of Ca added/ mol P)

Initial conditions:

$\text{PO}_4\text{-P}$  = 63 mg/L, pH = 8.05, alkalinity = 1890 mg/L,  $\text{NH}_4\text{-N}$  = 300 mg/L

After nitrification:

$\text{PO}_4\text{-P}$  = 63 mg/L, pH = 6.06, alkalinity = 63 mg/L,  $\text{NH}_4\text{-N}$  = 61 mg/L